

TRAINING NEED ASSESSMENT ON VULNERABILITY AND ENHANCING ADAPTIVE CAPACITY OF COMMUNITIES ON CLIMATE CHANGE

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ABSTRACT

Developing countries like India are considered particularly vulnerable to climatic changes due to their dependency on climate sensitive sectors such as agriculture, fisheries, forestry, water and other natural resources and limited capacities to anticipate and respond to climate changes. Most of the Indian population is concentrated in rural areas, which are harsh climatic regions of mountains, deserts, and river deltas, which make them more susceptible to changing climate. However, 62% of the cropped area is still dependent on rainfall, a component of climate.

The climatic variations in India have huge effect, as the agriculture sector in the country is monsoon dependent. Over 60 per cent of the crop area is under rain-fed agriculture that is highly vulnerable to climate variability and change. Any adverse impact on water availability due to recession of glaciers, decrease in rainfall and increased flooding in some pockets would threaten food security, cause degradation of ecosystem, affecting species that sustain the livelihood of rural households. In this circumstance a study on Training need assessment on vulnerability and enhancing adaptive capacity of communities on Climate Change has been done in Mahabubnagar district in Telangana state of farmers and extension functionaries with respect to climate change.

KEYWORDS: Training Needs on Climate Change, Adaptation, Coping Mechanisms

INTRODUCTION

Climate is an important determinant of the geographical distribution, composition and productivity of vegetation. Therefore, the climatic changes have profound implications for rural livelihoods, industry, biodiversity, soil and water resources and hence, Indian economy. The climate change induced effects would aggravate the existing stresses due to non-climatic factors, such as land use changes and the unsustainable exploitation of natural resources. Climatic extremes, not only with respect to the variability of the temperatures, but also increase in average temperatures coupled with erratic and low precipitation constitute the greatest risk to agriculture (Parry and Duinker 1990).

Effects of Climate Change

The change in climate has two broad types of effects on agriculture; effect on the geographical limits to the regions where different types of crops and livestock can be produced and effects on potential yields of crops and livestock in these regions.

The effects include, increased growing season, extended margin of the potential cropping and grazing in mid-latitude regions, which may reduce the yield potential in core areas of current production as increased temperatures encourage more rapid maturation of plants and shorten the period of grain filling and extended geographic range of some

insect pests. The effects also include, changes in crop types, irrigation management, fertilizer use, soil drainage and erosion and farm infrastructure. The climate change effect density of livestock population and yield. Climate change poses a direct and growing threat to the livelihoods of millions of people in India. In rural areas of India, over 700 million are directly dependent on climate-sensitive sectors like agriculture, forests, fisheries and natural resources such as water, fodder and biodiversity for their livelihoods and survival (Satapathy 2011).

Developing countries like India are considered particularly vulnerable to climatic changes due to their dependency on climate sensitive sectors such as agriculture, fisheries, forestry, water and other natural resources and limited capacities to anticipate and respond to climate changes. Most of the Indian population is concentrated in rural areas, which are harsh climatic regions of mountains, deserts, and river deltas, which make them more susceptible to changing climate. Hence, It is important to build community level capacities with regard to best practices and technologies in the agriculture, water and energy sector and assessment of training needs for coping mechanisms for climate change is very crucial in present situation

OBJECTIVES

The study is aimed at to analyze the training needs on vulnerability assessment and enhancing adaptive capacity of communities on Climate Change of the three selected parameters i.e., agriculture, water and energy. The specific objectives of the study are;

- To explore the training need assessment of the respondents with specific reference to vulnerability and enhancing adaptive capacity of communities on Climate Change
- To analyze the training requirements in terms of experiences in utilization of training undergone and suggestions for improvement.
- To identify the Constraints in Effective Utilization of Training inputs on climate change.

METHODOLOGY

The data has been collected from the various sources to accomplish the first stage of the programme. The existing training needs pertaining to the three parameters i.e., Agriculture, Water and Energy was obtained as these three parameters have direct relationship with climate and in turn with farmers' vulnerability. The data was collected from different stakeholders at village, mandal and district levels to assess the training needs of different stake holders. Two categories of respondents were selected for the collection of primary data. A representative sample of extension functionaries in all three thematic departments at various levels were selected in extension functionary's category and farmers from eleven representative villages of the eleven Agro Eco Situations in the districts as given below. Total number of extension functionaries and farmers interviewed were 120 and 110 respectively.

Table 1

S. No.	Agro Ecological Situation	Representative Village	Mandal
1	Black Soils irrigated under RDS canal	Chennupad	Manopad
2	Black Soils irrigated under Jurala project	Masthipur	Atmakur
3	Black Soils irrigated under tanks without conjunctive use	Bandarupally	C.C. Kunta

Table 1: Contd.,			
4	Red Soils irrigated under tanks without conjunctive use	Kanaipally	Kothakota
5	Red Soils irrigated under tanks with conjunctive use	Kisthapur	Dhanwada
6	Black Soils irrigated under tanks with conjunctive use	Fardipur	C.C. Kunta
7	Black Soils irrigated under Wells	Mulamalla	Atmakur
8	Red Soils irrigated under Wells	Peddandandigam	Kodangal
9	Black Soils Rainfed	Vadicherla	Bomrapet
10	Red Soils Rainfed	Komireddypally	Addakal
11	Problematic Soils	Kollampally	Narayanpet

The data from the two categories of respondents were collected with a pre-tested interview schedule. In addition, information was collected using participatory rural appraisal techniques and focused group discussions. The data obtained from the respondents were analyzed by using simple statistical tools.

RESULTS AND DISCUSSIONS

The training needs in terms of knowledge and skills and other competencies required for vulnerability assessment and enhancing adaptive capacity of communities of two categories of respondents with special reference to climate related aspects and technologies was analyzed. Secondly, the study was also made an attempt to analyze the training requirements in terms of experiences in utilization of training undergone and suggestions for improvement.

Training Programmes Undergone by Extension functionaries

The details of the training programmes undergone by the respondent extension functionaries are given in Table 1

Table 2: Training Programmes Undergone by Extension functionaries

S. No	Training Programmes Undergone
01	Foundation Course for Agriculture Officers
02	Disease monitoring
03	Basic Training on Artificial Insemination
04	Towards better Work Culture
05	Integrated Pest Management
06	Disease resistance for Sustainable Agriculture
07	Training of Trainers on training skills, health, Water and Land management
08	Tank management
09	Natural resource management
10	Risk management
11	Winter school and Biotechnology
12	Integration of Livestock with Watershed Development
13	Livestock- Livelihood- Leadership
14	Wool Shearing by machine
15	Ground water harvesting
16	Watershed Management
17	Improved dry land agricultural implements
18	Organization of Groups
19	Organic farming
20	Micro irrigation
21	Disaster Management
22	Personality development and Stress management

The above Table indicates that in general all extension functionaries have undergone training in their respective subject matter, while exposure to climate related aspects was conspicuous by absence. Only a Scientist from RARS, Palem has undergone training on Climate risk Management. Thus data clearly indicate the gap in climate knowledge among extension functionaries.

Extent of Utilization of Training by Extension Functionaries

While attending the training programmes by the extension functionaries are to what extent the same has been utilized in the field. The experiences indicate that the utilization of what is learnt in training programmes is far from satisfactory. Hence, an attempt has been made to assess the extent of utilization by the selected extension functionaries. It can be seen from the Table 2 that above 50 per cent of the respondents have utilized training to some extent. On the other hand 20 per cent of the respondents have not utilized it.

Table 2: Extent of Utilization of Training by Extension functionaries

S. No	Extent of Use	F	%
01	Great Extent	28	23.00
02	Some Extent	65	54.00
03	Less Extent	04	3.00
04	Not Utilized	23	20.00

Extent of Utilisation of Trainings by Extension functionaries

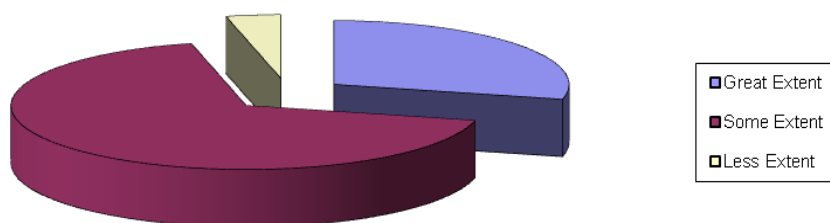


Figure 1

Trainings Attended by the Farmers

Table 3 shows that majority of the farmers have under training programmes on Rythu Mithra Groups (RMGs) followed by Farmer Field School (FFS). As these programmes were organized in the village and the farmers were able to attend the same.

Table 3: Training attended by Farmers

S. No	Training Programmes Attended	F	%
01	RMG training	31	28.00
02	FFS	19	17.00
03	Watershed training	07	6.00
04	Training on medicinal plants	07	6.00
05	Training on millets	07	6.00
06	Training on fruit crops	12	11.00
07	Training on drip irrigation	07	6.00

Constraints in Effective Utilization of Training by Extension functionaries

Data in the Table 4 show that lack of infrastructures facilities is the major constraint in effective utilization of trainings. Animal Husbandry department extension functionaries expressed that limited funds for the training was also a major limiting factor in this regard.

Table 4: Constraints in Effective Utilization of Training by Extension Functionaries

S. No	Constraints	F	%
01	Theoretical Training content	34	28.00
02	Lack of Infrastructure facilities in the field	24	20.00
03	Lack of follow-up	06	5.00
04	Inadequate Budget allocation	06	5.00
05	Training content not suitable to the field problems	10	8.00

Suggestions for Effective Utilization of Training

The Table given below indicates the suggestions made by the extension functionaries in effective utilization of training programmes. Practical orientation of the trainings is key factor in effective utilization of training in the field and there should be follow-up measures for constant revival of knowledge on the subject.

Table 5: Suggestions for Effective Utilization of Training

S. No	Suggestions	F	%
01	Practical Oriented Training programmes	40	33.00
02	Follow-up and periodical review	16	13.00
03	Provision of relevant training material	28	23.00
04	Separate Budget allocation for training	06	5.00
05	Emphasis on non-technical and managerial aspects	04	3.00

Training Needs of Extension Functionaries

Taking into consideration the present knowledge extension functionaries have indicated the areas in which they need trainings. Natural Resource Management was the need of the hour followed by communication skills. The number of respondents indicating need for training in climate related aspects was not significant (1) This may be attributed to lack of awareness on the importance of climate in development initiations. This underscores the need for sensitization of the functionaries on these aspects.

Table 6: Training Needs of Extension Functionaries

S. No	Training Content	F	%
01	Sample Collection of Pesticide and Fertilizers	05	4.00
02	Extension strategies in Animal Husbandry	05	4.00
03	Natural Resource Management	20	17.00
04	Personality Development	10	08.00
05	Communication skills	12	10.00
06	Knowledge about WS and L fertilizers	05	4.00
07	Disease forecasting technology	05	4.00
08	Skills in utilizing the meteorological data from satellite	05	4.00
09	Measures to reduce Evapo-transpiration	05	4.00
10	Knowledge about Genetics, Biotechnology and Breeding	10	4.00
11	Scientific analysis of Available weather data to plan crop operations	05	4.00

Table 6: Contd.,			
12	Climatic Vulnerability Management in small areas	05	4.00
13	Market led Extension and IT in Agriculture	05	4.00
14	Climate Disease relationship in Animals	05	4.00
15	Artificial Rain Harvesting	05	4.00
16	Improved technology in Non-conventional energy	05	4.00
17	Machine Shearing	05	4.00
18	Computer training in accounting	05	4.00
19	Managerial skills	05	4.00

Knowledge and Skills Needs of Extension Functionaries

The respondents were asked to indicate the specific needs in terms of knowledge and skills required so that training programmes could be designed accordingly. The responses may be seen at Table 7. It is observed that knowledge on Participatory Technology Development (PTD) was felt as need of the hour; as much as 67% of the extension functionaries have mentioned this area. On the other hand, 64% of the extension functionaries have felt that they require skills in PRA tools. This implies that extension functionaries give priority to the participatory approach and methodologies.

Table 7: Knowledge and Skills Needs of Extension Functionaries

S. No	Area	Knowledge		Skills	
		F	%	F	%
01	Participatory Approach	46	38.00	91	59.00
02	PRA Tools	43	36.00	77	64.00
03	Group Approach	53	44.00	46	38.00
04	Participatory Technology Development	80	67.00	37	31.00
05	Extension methods and Communication skills	65	54.00	71	59.00
06	Project Management	55	46.00	53	44.00
07	Coordination	41	34.00	55	46.00
08	Managerial Aspects	61	51.00	59	49.00
09	Technical Aspects	77	64.00	53	44.00
10	Advanced Crop Management Aspects	71	59.00	53	44.00

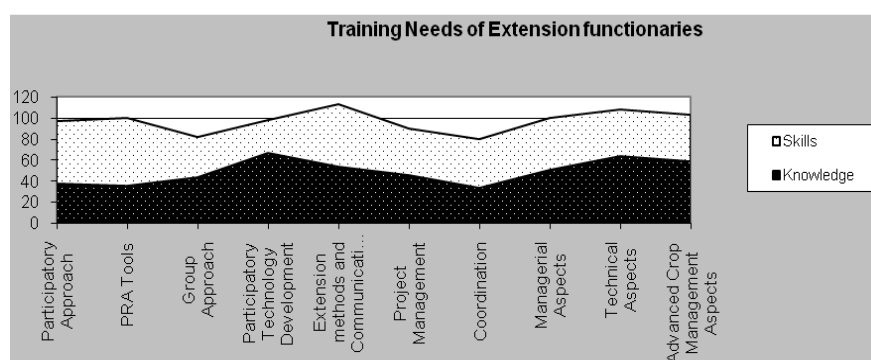


Figure 2

Climate Related Training Needs of Extension Functionaries

Table below indicates the training needs of the extension functionaries on climate related aspects. An equal percentage of respondents seek training in knowledge on Impact of climate and Adaptation practices. In contrast the skill requirement of the extension functionaries were coping/adaptation technologies and practices followed by Importance of climate and its variation, assessment tools and impact of climate.

Table 8: Climate Related Training Needs of Extension Functionaries

S. No	Aspect	Knowledge		Skills	
		F	%	F	%
01	Importance of Climate and its variation	80	67.00	65	54.00
02	Impact of Climate	89	74.00	37	31.00
03	Assessment tools	80	67.00	59	49.00
04	Coping/ Adaptation Technologies and Practices	89	74.00	67	56.00

Climate Related Training Needs of Farmers

When asked about the training requirements farmers have indicated that training in effect of climate on crops, water conservation measures, Drought Resistant Varieties and package of practices for low lying areas would be helpful for them to practices in the field. (Table 9)

Table 9: Climate Related Training Needs of Farmers

S. No	Training Content
01	Knowledge on effect of climate on crops
02	Better water conservation techniques
03	Package of practices of crops that suits in low lying areas
04	Drought Resistant Varieties

CONCLUSIONS

A majority (54%) of the extension functionaries have observed that the knowledge acquired in various training programs was useful only to some extent. Lack of infrastructure facilities and theoretical orientation of the training content were the constraints in utilization of the knowledge acquired in various training programs. Hence practical orientation of the training was the key factor in effective utilization.

Training needs of the extension functionaries with respect to climate change were, knowledge on impact of climate and adaptation practices and skills in coping/adaptation technologies and practices, importance of climate and its variation and assessment tools were identified.

A majority of the farmers have attended RMG trainings and Farmers field schools organized by the Department of Agriculture. They have expressed the need for training in climate related aspects viz., effect of climate on crops, water conservation measures etc. They have indicated that package of practices for low lying areas would be helpful and practicable.

The following are the some strategies proposed for training need on reducing vulnerability and enhancing the adaptive capacity of the farming community in the district.

Capacity Building Programme to Extension Functionaries and Farmers for Imparting the Knowledge on Importance of the Climate Change

The study revealed that there was a need to induce knowledge among the extension functionaries and farmers on crop- climate relationship. Despite its effect on every aspect of farming, climate was not considered as an important parameter excepting rainfall. In order to improve the knowledge levels and understanding the climate at micro level trainings and capacity building programmes need to be organized.

Developing Coping Mechanisms to the Climatic Variations

Climate is dynamic and cannot be controlled. Agriculture is dependent on climate. As climate is unmanageable, coping mechanisms to the changing climate need to be developed and familiarized among farmers to evade the ill effects of climatic changes. These coping mechanisms include, late sowing, selection of short duration varieties, water conservation etc., and depends upon the climate variability.

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